Bridges
Atmospheric Corrosion Resistance of Structural Steels. — Pedro Albrecht and Terry T. Hall, Jr.; 15(1), 2-24 (2003).
Location of Prestressing Steel Fractures in Concrete. — H. Scheel and B. Hillemeier; 15(3), 228-34 (2003).
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. — F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).

Bulk density
Performance Characteristics of Soil-Cement from Industry Waste Binder. — Juanrong Zheng and Weizu Qin; 15(6), 616-8 (2003).

Calcium
Cementing Material from Calcium Carbide Residue-Rice Husk Ash. — Chai Jaturapitakkul and Boonmark Roongreung; 15(5), 470-5 (2003).

Carbonation
Carbonation of Concrete Containing Mineral Admixtures. — P. Sulapha, S. F. Wong, T. H. Wee, and S. Swaddiwudhipong; 15(2), 134-43 (2003).
Influence of Recycled Aggregate on Interfacial Transition Zone, Strength, Chloride Penetration and Carbonation of Concrete. —Nobuaki Otsuki, Shin-ichi Miyazato, and Wanchai Yodsudjai; 15(5), 443-51 (2003).

Cement grouting
Prepacked Grouting Process in Concrete Construction. — Somsak Swaddiwudhipong, Jing Zhang, and Seng Lip Lee; 15(6), 567-76 (2003).

Cements
Permeation of High Performance Concrete. —M. I. Khan; 15(1), 84-92 (2003).
Processing Effects in Cementitious Composites: Extrusion and Casting. —Alva Peled and Surendra P. Shah; 15(2), 192-9 (2003).
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. I: Formulation. — Raphaël Tixier and Barzin Mobasher; 15(4), 305-13 (2003).
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. II: Comparison with Experiments. —Raphaël Tixier and Barzin Mobasher; 15(4), 314-22 (2003).
Cementing Material from Calcium Carbide Residue-Rice Husk Ash. —Chai Jaturapitakkul and Boonmark Roongreung; 15(5), 470-5 (2003).
Resistance Changes during Compression of Carbon Fiber Cement Composites. —Farhad Reza, Gordon B. Batson, Jerry A. Yamamuro, and Jong S. Lee; 15(5), 476-83 (2003).
Municipal Solid Waste Fly Ash as a Blended Cement Material. —Chia-Chia Goh, Kuan-Yeow Show, and Hee-Kiat Cheong; 15(6), 513-23 (2003).
Quantitative Description of the Pull-Out Behavior of Crimped Yarns from Cement Matrix. —Alva Peled and Arnon Bentur; 15(6), 537-44 (2003).
Polymer Effects on the Vibration Damping Behavior of Cement. —W. G. Wong, Ping Fang, and J. K. Pan; 15(6), 554-6 (2003).

Chlorides
Chloride Penetration in Nonsaturated Concrete. — Ayman Ababneh, Farid Benboudjema, and Yunping Xi; 15(2), 183-91 (2003).
Influence of Recycled Aggregate on Interfacial Transition Zone, Strength, Chloride Penetration and Carbonation of Concrete. — Nobuaki Otsuki, Shin-ichi Miyazato, and Wanchai Yodsudjai; 15(5), 443-51 (2003).
Corrosion of Steel Bars in Cracked Concrete under Marine Environment. — Tarek Uddin Mohammed, Nobuaki Otsuki, and Hidenori Hamada; 15(5), 460-9 (2003).

Clays
Durability of Boston Blue Clay in Waste Containment Applications. — John L. Daniels, Hilary I. Inyang, and Iskandar K. Iskandar; 15(2), 144-52 (2003).

Coastal environment
Corrosion of Steel Bars in Cracked Concrete under Marine Environment. — Tarek Uddin Mohammed, Nobuaki Otsuki, and Hidenori Hamada; 15(5), 460-9 (2003).

Coefficients
Nondestructive Testing of Mortar Specimens Using the Microwave Free-Space Method. —S. N. Kharkovsky and C. D. Atiş; 15(2), 200-4 (2003).

Cold weather operations
Cold Weather Placement of RCC. —Ying-Kit Choi, J. Douglas Neighbors, and Jamie D. Reichler; 15(2), 118-24 (2003).

Compaction
100-mm-Diameter Mold Used with Superpave Gyratory Compactor. —N. M. Jackson and L. J. Czor; 15(1), 60-6 (2003).

Composite materials
Processing Effects in Cementitious Composites: Extrusion and Casting. —Alva Peled and Surendra P. Shah; 15(2), 192-9 (2003).
Development of Design Values for Wood-Plastic Composite Materials. —Steven A. Davidow and Kenneth J. Fridley; 15(5), 415-8 (2003).
Resistance Changes during Compression of Carbon Fiber Cement Composites. —Farhad Reza, Gordon B. Batson, Jerry A. Yamamuro, and Jong S. Lee; 15(5), 476-83 (2003).
Load-Duration Behavior of Wood-Plastic Composites. — Christopher W. Brandt and Kenneth J. Fridley; 15(6), 524-36 (2003).

Compression
Effect of Waveform and Loading Sequence on Low-Cycle Compressive Fatigue Life of Spruce. —M. Gong and I. Smith; 15(1), 93-9 (2003).
Mechanical Properties of Lead Alloys in Compression. — John R. Riddington and Manjinder K. Sahota; 15(4), 323-8 (2003).

Compressive strength
Development of Bottom Ash as Pozzolanic Material. — Chai Jaturapitakkul and Raungrut Cheerarot; 15(1), 48-53 (2003).
Determination of Early Age Mortar and Concrete Strength by Ultrasonic Wave Reflections. —Thomas Voigt, Yilmaz Akkaya, and Surendra P. Shah; 15(3), 247-54 (2003).
Nondestructive Assessment of the Actual Compressive Strength of High-Strength Concrete. —Giovanni Pascale, Antonio Di Leo, and Virna Bonora; 15(5), 452-9 (2003).
Cementing Material from Calcium Carbide Residue-Rice Husk Ash. — Chai Jaturapitakkul and Boonmark Roongreung; 15(5), 470-5 (2003).
Alternative Cap Materials for Evaluating the Compressive Strength of Controlled Low-Strength Materials. — David Trejo, Kevin Folliard, and Lianxiang Du; 15(5), 484-90 (2003).
Municipal Solid Waste Fly Ash as a Blended Cement Material. — Chia-Chia Goh, Kuan-Yeow Show, and Hee-Kiat Cheong; 15(6), 513-23 (2003).
Performance Characteristics of Soil-Cement from Industry Waste Binder. — Juanrong Zheng and Weizu Qin; 15(6), 616-8 (2003).

Concrete
Permeation of High Performance Concrete. — M. I. Khan; 15(1), 84-92 (2003).
Internal Strain Measurements in Concrete Elements by Fiber Optic Sensors. — Barbara Bonfiglioli and Giovanni Pascale; 15(2), 125-33 (2003).
Carbonation of Concrete Containing Mineral Admixtures. — P. Sulapha, S. F. Wong, T. H. Wee, and S. Swaddiwudhipong; 15(2), 134-43 (2003).
High-Volume Fly Ash Concrete with High Strength and Low Drying Shrinkage. —Cengiz Duran Atiş; 15(2), 153-6 (2003).
Chloride Penetration in Nonsaturated Concrete. —Ayman Ababneh, Farid Benboudjema, and Yunping Xi; 15(2), 183-91 (2003).
Maize-cob Ash As Filler in Concrete. —Felix F. Udoeyo and Sanni A. Abubakar; 15(2), 205-8 (2003).
Ultrasonic Imaging of Concrete Elements Using Reconstruction by Synthetic Aperture Focusing Technique. —Martin Schickert, Martin Krause, and Wolfgang Müller; 15(3), 235-46 (2003).
Determination of Early Age Mortar and Concrete Strength by Ultrasonic Wave Reflections. —Thomas Voigt, Yilmaz Akkaya, and Surendra P. Shah; 15(3), 247-54 (2003).
Rheological Characterization of Heterogeneous Materials with Evolving Properties. —Laurent Arnaud; 15(3), 255-65 (2003).
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. II: Comparison with Experiments. —Raphaël Tixier and Barzin Mobasher; 15(4), 314-22 (2003).
Stress-Strain Relations and Modulus of Elasticity of Two-Stage Concrete. —Hakim S. Abdelgader and Jarosław Górski; 15(4), 329-34 (2003).
Assessment of Self-Compacting Concrete Immersed in Acidic Solutions. —A. K. Al-Tamimi and M. Sonebi; 15(4), 354-7 (2003).
Abrasion-Porosity-Strength Model for Fly Ash Concrete. — Cengiz Duran Atiş; 15(4), 408-10 (2003).
Effects of Mineral Admixture on Properties of Young Concrete. —Xianyu Jin and Zongjin Li; 15(5), 435-42 (2003).
Corrosion of Steel Bars in Cracked Concrete under Marine Environment. —Tarek Uddin Mohammed, Nobuaki Otsuki, and Hidenori Hamada; 15(5), 460-9 (2003).
Cementing Material from Calcium Carbide Residue-Rice Husk Ash. —Chai Jaturapitakkul and Boonmark Roongreung; 15(5), 470-5 (2003).
Substitution of Fly Ash, Slag, and Chemical Ad-

mixtures in Concrete Mix Designs. — Yingqin "Elaine" Jin and Nur Yazdani; 15(6), 602-8 (2003).
Biaxial Failure Model for Fiber Reinforced Concrete. — Xiao Dong Hu, Robert Day, and Peter Dux; 15(6), 609-15 (2003).

Concrete aggregates
Influence of Recycled Aggregate on Interfacial Transition Zone, Strength, Chloride Penetration and Carbonation of Concrete. — Nobuaki Otsuki, Shin-ichi Miyazato, and Wanchai Yodsudjai; 15(5), 443-51 (2003).
Simulation of Two-Dimensional Aggregate Distribution with Wall Effect. — J. J. Zheng, C. Q. Li, and L. Y. Zhao; 15(5), 506-10 (2003).

Concrete columns
Effect of Temperature on Thermal Properties of High-Strength Concrete. — V. K. R. Kodur and M. A. Sultan; 15(2), 101-7 (2003).

Concrete deterioration
Bond Geometry and Shear Strength of Steel Plates Bonded to Concrete on Heating. —Fernando J. F. G. Branco, António J. B. Tadeu, and José A. D. Nogueira; 15(6), 586-93 (2003).

Concrete durability
Residual Life of Corroding Reinforced Concrete Structures in Marine Environment. —Andrés A. Torres-Acosta and Miguel Martínez-Madrid; 15(4), 344-53 (2003).
Correlation of Rheological Properties to Durability and Strength of Hardened Concrete. —S. E. Chidiac, O. Maadani, A. G. Razaqpur, and N. P. Mailvaganam; 15(4), 391-9 (2003).

Concrete properties
Simulation of Two-Dimensional Aggregate Distribution with Wall Effect. —J. J. Zheng, C. Q. Li, and L. Y. Zhao; 15(5), 506-10 (2003).

Concrete slabs
Strength of Concrete Subjected to Pullout Load. —Lionello Bortolotti; 15(5), 491-5 (2003).

Concrete structures
Nondestructive Evaluation of Concrete Infrastructure with Ground Penetrating Radar. —Christiane Maierhofer; 15(3), 287-97 (2003).
Thermal Movements in Concrete: Case Study of Multistory Underground Car Park. —Walid Aboumoussa and Magued Iskander; 15(6), 545-53 (2003).
Life Cycle Modeling of Corrosion Affected Concrete Structures—Initiation. —C. Q. Li; 15(6), 594-601 (2003).

Concrete, precast
Properties of Field Manufactured Cast-Concrete Products Utilizing Recycled Materials. —Tarun R. Naik, Rudolph N. Kraus, Yoon-moon Chun, Bruce W. Ramme, and Shiw S. Singh; 15(4), 400-7 (2003).

Concrete, prestressed
Location of Prestressing Steel Fractures in Concrete. — H. Scheel and B. Hillemeier; 15(3), 228-34 (2003).

Concrete, reinforced
Effectiveness of Impressed Current Technique to Simulate Corrosion of Steel Reinforcement in Concrete. — Tamer A. El Maaddawy and Khaled A. Soudki; 15(1), 41-7 (2003).
Effect of Temperature on Thermal Properties of High-Strength Concrete. —V. K. R. Kodur and M. A. Sultan; 15(2), 101-7 (2003).
Tension Stiffening and Cracking of Steel Fiber-Reinforced Concrete. — Peter H. Bischoff; 15(2), 174-82 (2003).
Assessing Damage of Reinforced Concrete Beam Using "*b* -value" Analysis of Acoustic Emission Signals. — Ing. S. Colombo, I. G. Main, and M. C. Forde; 15(3), 280-6 (2003).
Bond Behavior of Corroded Steel Reinforcement in Concrete Wrapped with Carbon Fiber Reinforced Polymer Sheets. — Khaled Soudki and Ted Sherwood; 15(4), 358-70 (2003).
Damage Model Based Reinforced-Concrete Element. — Chee Kiong Soh, Yu Liu, Yue Xing Dong, and Xin Zheng Lu; 15(4), 371-80 (2003).

Constitutive models
Method for Performing Accelerated Characterization of Viscoelastic Constitutive Behavior of Asphaltic Concrete. — Curtis F. Berthelot, David H. Allen, and Chad R. Searcy; 15(5), 496-505 (2003).

Construction materials
Biaxial Failure Model for Fiber Reinforced Concrete. — Xiao Dong Hu, Robert Day, and Peter Dux; 15(6), 609-15 (2003).

Containments
Durability of Boston Blue Clay in Waste Containment Applications. —John L. Daniels, Hilary I. Inyang, and Iskandar K. Iskandar; 15(2), 144-52 (2003).

Correlation
Correlation of Rheological Properties to Durability and Strength of Hardened Concrete. —S. E. Chidiac, O. Maadani, A. G. Razaqpur, and N. P. Mailvaganam; 15(4), 391-9 (2003).

Corrosion
Atmospheric Corrosion Resistance of Structural Steels. — Pedro Albrecht and Terry T. Hall, Jr.; 15(1), 2-24 (2003).
Effectiveness of Impressed Current Technique to Simulate Corrosion of Steel Reinforcement in Concrete. — Tamer A. El Maaddawy and Khaled A. Soudki; 15(1), 41-7 (2003).
Ultrasonic Guided Waves for Inspection of Grouted Tendons and Bolts. —M. D. Beard, M. J. S. Lowe, and P. Cawley; 15(3), 212-8 (2003).
Location of Prestressing Steel Fractures in Concrete. — H. Scheel and B. Hillemeier; 15(3), 228-34 (2003).
Residual Life of Corroding Reinforced Concrete Structures in Marine Environment. —Andrés A. Torres-Acosta and Miguel Martínez-Madrid; 15(4), 344-53 (2003).
Bond Behavior of Corroded Steel Reinforcement in Concrete Wrapped with Carbon Fiber Reinforced Polymer Sheets. —Khaled Soudki and Ted Sherwood; 15(4), 358-70 (2003).
Corrosion of Steel Bars in Cracked Concrete under Marine Environment. —Tarek Uddin Mohammed, Nobuaki Otsuki, and Hidenori Hamada; 15(5), 460-9 (2003).
Life Cycle Modeling of Corrosion Affected Concrete Structures—Initiation. —C. Q. Li; 15(6), 594-601 (2003).

Cracking
Durability of Boston Blue Clay in Waste Containment Applications. —John L. Daniels, Hilary I. Inyang, and Iskandar K. Iskandar; 15(2), 144-52 (2003).
Tension Stiffening and Cracking of Steel Fiber-Reinforced Concrete. — Peter H. Bischoff; 15(2), 174-82 (2003).
Signal-Based Acoustic Emission Techniques in Civil Engineering. — Christian U. Grosse, Hans W. Reinhardt, and Florian Finck; 15(3), 274-9 (2003).
Assessing Damage of Reinforced Concrete Beam Using "*b* -value" Analysis of Acoustic Emission Signals. — Ing. S. Colombo, I. G. Main, and M. C. Forde; 15(3), 280-6 (2003).
Residual Life of Corroding Reinforced Concrete Structures in Marine Environment. — Andrés A. Torres-Acosta and Miguel Martínez-Madrid; 15(4), 344-53 (2003).
Corrosion of Steel Bars in Cracked Concrete under Marine Environment. — Tarek Uddin Mohammed, Nobuaki Otsuki, and Hidenori Hamada; 15(5), 460-9 (2003).

Creep
Load-Duration Behavior of Wood-Plastic Composites. — Christopher W. Brandt and Kenneth J. Fridley; 15(6), 524-36 (2003).

Cyclic loads
Effect of Waveform and Loading Sequence on Low-Cycle Compressive Fatigue Life of Spruce. —M. Gong and I. Smith; 15(1), 93-9 (2003).

Damage
Fatigue and Healing Characterization of Asphalt Mixtures. — Yong-Rak Kim, D. N. Little, and R. L. Lytton; 15(1), 75-83 (2003).
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. I: Formulation. — Raphaël Tixier and Barzin Mobasher; 15(4), 305-13 (2003).
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. II: Comparison with Experiments. —Raphaël Tixier and Barzin Mobasher; 15(4), 314-22 (2003).
Damage Model Based Reinforced-Concrete Element. — Chee Kiong Soh, Yu Liu, Yue Xing Dong, and Xin Zheng Lu; 15(4), 371-80 (2003).

Damping
Polymer Effects on the Vibration Damping Behavior of Cement. —W. G. Wong, Ping Fang, and J. K. Pan; 15(6), 554-6 (2003).
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. —F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).

Data analysis
Evaluation of FWD Data for Determination of Layer Moduli of Pavements. —Yusuf Mehta and Reynaldo Roque; 15(1), 25-31 (2003).

Defects
Stress Measurement and Defect Detection in Steel Strands by Guided Stress Waves. —Francesco Lanza di Scalea, Piervincenzo Rizzo, and Frieder Seible; 15(3), 219-27 (2003).

Deformation
Effects of Mineral Admixture on Properties of Young Concrete. —Xianyu Jin and Zongjin Li; 15(5), 435-42 (2003).

Density
Effectiveness of Impressed Current Technique to Simulate Corrosion of Steel Reinforcement in Concrete. — Tamer A. El Maaddawy and Khaled A. Soudki; 15(1), 41-7 (2003).
Dielectric Properties of Asphalt Pavement.

—Edward J. Jaselskis, Jonas Grigas, and Algirdas Brilingas; 15(5), 427-34 (2003).
Simulation of Two-Dimensional Aggregate Distribution with Wall Effect. — J. J. Zheng, C. Q. Li, and L. Y. Zhao; 15(5), 506-10 (2003).

Design
Development of Design Values for Wood-Plastic Composite Materials. — Steven A. Davidow and Kenneth J. Fridley; 15(5), 415-8 (2003).
Substitution of Fly Ash, Slag, and Chemical Admixtures in Concrete Mix Designs. — Yingqin "Elaine" Jin and Nur Yazdani; 15(6), 602-8 (2003).

Deterioration
Assessment of Self-Compacting Concrete Immersed in Acidic Solutions. — A. K. Al-Tamimi and M. Sonebi; 15(4), 354-7 (2003).

Diffusion
Application of FTIR-ATR to Characterization of Bitumen Rejuvenator Diffusion. — Robert Karlsson and Ulf Isacsson; 15(2), 157-65 (2003).
Chloride Penetration in Nonsaturated Concrete. —Ayman Ababneh, Farid Benboudjema, and Yunping Xi; 15(2), 183-91 (2003).

Distribution
Simulation of Two-Dimensional Aggregate Distribution with Wall Effect. —J. J. Zheng, C. Q. Li, and L. Y. Zhao; 15(5), 506-10 (2003).

Durability
Effectiveness of Impressed Current Technique to Simulate Corrosion of Steel Reinforcement in Concrete. — Tamer A. El Maaddawy and Khaled A. Soudki; 15(1), 41-7 (2003).
Durability of Boston Blue Clay in Waste Containment Applications. —John L. Daniels, Hilary I. Inyang, and Iskandar K. Iskandar; 15(2), 144-52 (2003).

Dynamic tests
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. —F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).

Elastic properties
Nonstandard Tensile Coupon for Fiber-Reinforced Plastics. —P. D. Gosling and M. Saribiyik; 15(2), 108-17 (2003).

Elasticity
Laboratory Evaluation of Fiber-Optic Sensors for Strain Monitoring. —Burong Zhang, Brahim Benmokrane, and Jean-Francois Nicole; 15(4), 381-90 (2003).

Elastoplasticity
Biaxial Failure Model for Fiber Reinforced Concrete. — Xiao Dong Hu, Robert Day, and Peter Dux; 15(6), 609-15 (2003).

Electrical resistivity
Resistance Changes during Compression of Carbon Fiber Cement Composites. —Farhad Reza, Gordon B. Batson, Jerry A. Yamamuro, and Jong S. Lee; 15(5), 476-83 (2003).

Emulsion
Hydration Mechanisms, Microstructure, and Mechanical Properties of Mortars Prepared with Mixed Binder Cement Slurry-Asphalt Emulsion. — Nadia Pouliot, Jacques Marchand, and Michel Pigeon; 15(1), 54-9 (2003).

Expansion joints
Thermal Movements in Concrete: Case Study of Multistory Underground Car Park. — Walid Aboumoussa and Magued Iskander; 15(6), 545-53 (2003).

Fabrics
Quantitative Description of the Pull-Out Behavior of Crimped Yarns from Cement Matrix. — Alva Peled and Arnon Bentur; 15(6), 537-44 (2003).

Failure modes
Biaxial Failure Model for Fiber Reinforced Concrete. — Xiao Dong Hu, Robert Day, and Peter Dux; 15(6), 609-15 (2003).

Failures
Strength of Concrete Subjected to Pullout Load. — Lionello Bortolotti; 15(5), 491-5 (2003).

Falling bodies
Evaluation of FWD Data for Determination of Layer Moduli of Pavements. — Yusuf Mehta and Reynaldo Roque; 15(1), 25-31 (2003).

Fatigue
Fatigue and Healing Characterization of Asphalt Mixtures. — Yong-Rak Kim, D. N. Little, and R. L. Lytton; 15(1), 75-83 (2003).
Effect of Waveform and Loading Sequence on Low-Cycle Compressive Fatigue Life of Spruce. —M. Gong and I. Smith; 15(1), 93-9 (2003).

Fiber composites
Preliminary Thermography Studies for Quality Control of Concrete Structures Strengthened with Fiber-Reinforced Polymer Composites. —Monica A. Starnes, Nicholas J. Carino, and Eduardo A. Kausel; 15(3), 266-73 (2003).

Fiber optics
Internal Strain Measurements in Concrete Elements by Fiber Optic Sensors. —Barbara Bonfiglioli and Giovanni Pascale; 15(2), 125-33 (2003).

Fiber reinforced materials
Biaxial Failure Model for Fiber Reinforced Concrete. — Xiao Dong Hu, Robert Day, and Peter Dux; 15(6), 609-15 (2003).

Fiber reinforced plastics
Nonstandard Tensile Coupon for Fiber-Reinforced Plastics. —P. D. Gosling and M. Saribiyik; 15(2), 108-17 (2003).

Fiber reinforced polymers
Preliminary Thermography Studies for Quality Control of Concrete Structures Strengthened with Fiber-Reinforced Polymer Composites. —Monica A. Starnes, Nicholas J. Carino, and Eduardo A. Kausel; 15(3), 266-73 (2003).
Bond Behavior of Corroded Steel Reinforcement in Concrete Wrapped with Carbon Fiber Reinforced Polymer Sheets. —Khaled Soudki and Ted Sherwood; 15(4), 358-70 (2003).
Laboratory Evaluation of Fiber-Optic Sensors for Strain Monitoring. —Burong Zhang, Brahim Benmokrane, and Jean-Francois Nicole; 15(4), 381-90 (2003).

Fibers
Processing Effects in Cementitious Composites: Extrusion and Casting. —Alva Peled and Surendra P. Shah; 15(2), 192-9 (2003).
Resistance Changes during Compression of Carbon Fiber Cement Composites. —Farhad Reza, Gordon B. Batson, Jerry A. Yamamuro, and Jong S. Lee; 15(5), 476-83 (2003).
Quantitative Description of the Pull-Out Behavior of Crimped Yarns from Cement Matrix. — Alva Peled and Arnon Bentur; 15(6), 537-44 (2003).

Fills
Maize-cob Ash As Filler in Concrete. — Felix F. Udoeyo and Sanni A. Abubakar; 15(2), 205-8 (2003).

Finite element method
Preliminary Thermography Studies for Quality Control of Concrete Structures Strengthened with Fiber-Reinforced Polymer Composites. — Monica A. Starnes, Nicholas J. Carino, and Eduardo A. Kausel; 15(3), 266-73 (2003).

Florida
Substitution of Fly Ash, Slag, and Chemical Admixtures in Concrete Mix Designs. — Yingqin "Elaine" Jin and Nur Yazdani; 15(6), 602-8 (2003).

Fly ash
ASR Potentials of Glass Aggregates in Water-Glass Activated Fly Ash and Portland Cement Mortars. — Z. Xie, W. Xiang, and Y. Xi; 15(1), 67-74 (2003).
Permeation of High Performance Concrete. —M. I. Khan; 15(1), 84-92 (2003).
High-Volume Fly Ash Concrete with High Strength and Low Drying Shrinkage. —Cengiz Duran Atiş; 15(2), 153-6 (2003).
Processing Effects in Cementitious Composites: Extrusion and Casting. —Alva Peled and Surendra P. Shah; 15(2), 192-9 (2003).
Reuse of Incinerator Fly Ash in Soft Soil Stabilization. — Kuan-Yeow Show, Joo-Hwa Tay, and Anthony T. C. Goh; 15(4), 335-43 (2003).
Properties of Field Manufactured Cast-Concrete Products Utilizing Recycled Materials. —Tarun R. Naik, Rudolph N. Kraus, Yoon-moon Chun, Bruce W. Ramme, and Shiw S. Singh; 15(4), 400-7 (2003).
Abrasion-Porosity-Strength Model for Fly Ash Concrete. — Cengiz Duran Atiş; 15(4), 408-10 (2003).
Municipal Solid Waste Fly Ash as a Blended Cement Material. —Chia-Chia Goh, Kuan-Yeow Show, and Hee-Kiat Cheong; 15(6), 513-23 (2003).
Substitution of Fly Ash, Slag, and Chemical Admixtures in Concrete Mix Designs. —Yingqin "Elaine" Jin and Nur Yazdani; 15(6), 602-8 (2003).

Fractures
Fatigue and Healing Characterization of Asphalt Mixtures. — Yong-Rak Kim, D. N. Little, and R. L. Lytton; 15(1), 75-83 (2003).
Ultrasonic Guided Waves for Inspection of Grouted Tendons and Bolts. —M. D. Beard, M. J. S. Lowe, and P. Cawley; 15(3), 212-8 (2003).
Location of Prestressing Steel Fractures in Concrete. — H. Scheel and B. Hillemeier; 15(3), 228-34 (2003).

Glass
ASR Potentials of Glass Aggregates in Water-Glass Activated Fly Ash and Portland Cement Mortars. — Z. Xie, W. Xiang, and Y. Xi; 15(1), 67-74 (2003).

Glass reinforced plastics
Nonstandard Tensile Coupon for Fiber-Reinforced Plastics. —P. D. Gosling and M. Saribiyik; 15(2), 108-17 (2003).

Grouting
Prepacked Grouting Process in Concrete Construction. — Somsak Swaddiwudhipong, Jing Zhang, and Seng Lip Lee; 15(6), 567-76 (2003).

High strength concretes
Effect of Temperature on Thermal Properties of High-Strength Concrete. — V. K. R. Kodur and M. A. Sultan; 15(2), 101-7 (2003).
Nondestructive Assessment of the Actual Compressive Strength of High-Strength Concrete. — Giovanni Pascale, Antonio Di Leo, and Virna Bonora; 15(5), 452-9 (2003).

Hydration
Nondestructive Testing of Mortar Specimens Using the Microwave Free-Space Method. — S. N. Kharkovsky and C. D. Atiş; 15(2), 200-4 (2003).
Determination of Early Age Mortar and Concrete Strength by Ultrasonic Wave Reflections. — Thomas Voigt, Yilmaz Akkaya, and Surendra P. Shah; 15(3), 247-54 (2003).

Hydraulic conductivity
Durability of Boston Blue Clay in Waste Containment Applications. —John L. Daniels, Hilary I. Inyang, and Iskandar K. Iskandar; 15(2), 144-52 (2003).

Hydrocarbons
Formulation of Mix Design for Asphaltic Incorporation of Hydrocarbon Contaminated Soil. —R. A. Tarefder, M. E. Ruckgaber, M. Zaman, and D. Patton; 15(2), 166-73 (2003).

Imaging techniques
Ultrasonic Imaging of Concrete Elements Using Reconstruction by Synthetic Aperture Focusing Technique. —Martin Schickert, Martin Krause, and Wolfgang Müller; 15(3), 235-46 (2003).

Impact tests
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. —F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).

Industrial wastes
Performance Characteristics of Soil-Cement from Industry Waste Binder. —Juanrong Zheng and Weizu Qin; 15(6), 616-8 (2003).

Infrared imaging
Preliminary Thermography Studies for Quality Control of Concrete Structures Strengthened with Fiber-Reinforced Polymer Composites. —Monica A. Starnes, Nicholas J. Carino, and Eduardo A. Kausel; 15(3), 266-73 (2003).

Infrastructure
Nondestructive Evaluation of Concrete Infrastructure with Ground Penetrating Radar. —Christiane Maierhofer; 15(3), 287-97 (2003).
Recent Research in Nondestructive Evaluation of Civil Infrastructures. —Peter C. Chang and S. Chi Liu; 15(3), 298-304 (2003).

Inspection
Nondestructive Evaluation of Concrete Infrastructure with Ground Penetrating Radar. —Christiane Maierhofer; 15(3), 287-97 (2003).

Leaching
Thermal Stabilization of Iron-Rich Sludge for High Strength Aggregates. —Joo-Hwa Tay, Kuan-Yeow Show, Sze-Yunn Hong, Chao-Yu Chien, and Duu-Jong Lee; 15(6), 577-85 (2003).

Lead
Mechanical Properties of Lead Alloys in Compression. — John R. Riddington and Manjinder K. Sahota; 15(4), 323-8 (2003).

Life cycles
Life Cycle Modeling of Corrosion Affected Concrete Structures—Initiation. — C. Q. Li; 15(6), 594-601 (2003).

Losses
Dielectric Properties of Asphalt Pavement. — Edward J. Jaselskis, Jonas Grigas, and Algirdas Brilingas; 15(5), 427-34 (2003).

Marine clays
Thermal Stabilization of Iron-Rich Sludge for High Strength Aggregates. — Joo-Hwa Tay, Kuan-Yeow Show, Sze-Yunn Hong, Chao-Yu Chien, and Duu-Jong Lee; 15(6), 577-85 (2003).

Material properties
Rheological Characterization of Heterogeneous Materials with Evolving Properties. — Laurent Arnaud; 15(3), 255-65 (2003).

Materials
Signal-Based Acoustic Emission Techniques in Civil Engineering. —Christian U. Grosse, Hans W. Reinhardt, and Florian Finck; 15(3), 274-9 (2003).
Alternative Cap Materials for Evaluating the Compressive Strength of Controlled Low-Strength Materials. — David Trejo, Kevin Folliard, and Lianxiang Du; 15(5), 484-90 (2003).

Measurement
Nondestructive Testing of Mortar Specimens Using the Microwave Free-Space Method. —S. N. Kharkovsky and C. D. Atiş; 15(2), 200-4 (2003).

Mechanical properties
Hydration Mechanisms, Microstructure, and Mechanical Properties of Mortars Prepared with Mixed Binder Cement Slurry-Asphalt Emulsion. — Nadia Pouliot, Jacques Marchand, and Michel Pigeon; 15(1), 54-9 (2003).
Mechanical Properties of Lead Alloys in Compression. — John R. Riddington and Manjinder K. Sahota; 15(4), 323-8 (2003).
Method for Performing Accelerated Characterization of Viscoelastic Constitutive Behavior of Asphaltic Concrete. —Curtis F. Berthelot, David H. Allen, and Chad R. Searcy; 15(5), 496-505 (2003).

Microscopy
Crumb Rubber–Bitumen Interactions: Cold-Stage Optical Microscopy. —Panagiotis Frantzis; 15(5), 419-26 (2003).

Microstructure
Hydration Mechanisms, Microstructure, and Mechanical Properties of Mortars Prepared with Mixed Binder Cement Slurry-Asphalt Emulsion. — Nadia Pouliot, Jacques Marchand, and Michel Pigeon; 15(1), 54-9 (2003).

Microwaves
Nondestructive Testing of Mortar Specimens Using the Microwave Free-Space Method. —S. N. Kharkovsky and C. D. Atiş; 15(2), 200-4 (2003).

Mixing
Formulation of Mix Design for Asphaltic Incorporation of Hydrocarbon Contaminated Soil. —R. A. Tarefder, M. E. Ruckgaber, M. Zaman, and D. Patton; 15(2), 166-73 (2003).

Mixtures
Cementing Material from Calcium Carbide Residue-Rice Husk Ash. — Chai Jaturapitakkul and Boonmark Roongreung; 15(5), 470-5 (2003).

Models
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. I: Formulation. — Raphaël Tixier and Barzin Mobasher; 15(4), 305-13 (2003).
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. II: Comparison with Experiments. — Raphaël Tixier and Barzin Mobasher; 15(4), 314-22 (2003).
Damage Model Based Reinforced-Concrete Element. — Chee Kiong Soh, Yu Liu, Yue Xing Dong, and Xin Zheng Lu; 15(4), 371-80 (2003).
Abrasion-Porosity-Strength Model for Fly Ash Concrete. — Cengiz Duran Atiş; 15(4), 408-10 (2003).
Life Cycle Modeling of Corrosion Affected Concrete Structures—Initiation. — C. Q. Li; 15(6), 594-601 (2003).

Monitoring
Stress Measurement and Defect Detection in Steel Strands by Guided Stress Waves. —Francesco Lanza di Scalea, Piervincenzo Rizzo, and Frieder Seible; 15(3), 219-27 (2003).
Recent Research in Nondestructive Evaluation of Civil Infrastructures. —Peter C. Chang and S. Chi Liu; 15(3), 298-304 (2003).

Mortars
Hydration Mechanisms, Microstructure, and Mechanical Properties of Mortars Prepared with Mixed Binder Cement Slurry-Asphalt Emulsion. — Nadia Pouliot, Jacques Marchand, and Michel Pigeon; 15(1), 54-9 (2003).
ASR Potentials of Glass Aggregates in Water-Glass Activated Fly Ash and Portland Cement Mortars. — Z. Xie, W. Xiang, and Y. Xi; 15(1), 67-74 (2003).
Nondestructive Testing of Mortar Specimens Using the Microwave Free-Space Method. —S. N. Kharkovsky and C. D. Atiş; 15(2), 200-4 (2003).
Determination of Early Age Mortar and Concrete Strength by Ultrasonic Wave Reflections. —Thomas Voigt, Yilmaz Akkaya, and Surendra P. Shah; 15(3), 247-54 (2003).
Rheological Characterization of Heterogeneous Materials with Evolving Properties. —Laurent Arnaud; 15(3), 255-65 (2003).

Municipal wastes
Municipal Solid Waste Fly Ash as a Blended Cement Material. —Chia-Chia Goh, Kuan-Yeow Show, and Hee-Kiat Cheong; 15(6), 513-23 (2003).

Nondestructive tests
Nondestructive Testing of Mortar Specimens Using the Microwave Free-Space Method. —S. N. Kharkovsky and C. D. Atiş; 15(2), 200-4 (2003).
Location of Prestressing Steel Fractures in Concrete. — H. Scheel and B. Hillemeier; 15(3), 228-34 (2003).
Determination of Early Age Mortar and Concrete Strength by Ultrasonic Wave Reflections. —Thomas Voigt, Yilmaz Akkaya, and Surendra P. Shah; 15(3), 247-54 (2003).
Preliminary Thermography Studies for Quality Control of Concrete Structures Strengthened with Fiber-Reinforced Polymer Composites.

—Monica A. Starnes, Nicholas J. Carino, and Eduardo A. Kausel; 15(3), 266-73 (2003).
Signal-Based Acoustic Emission Techniques in Civil Engineering. — Christian U. Grosse, Hans W. Reinhardt, and Florian Finck; 15(3), 274-9 (2003).
Nondestructive Evaluation of Concrete Infrastructure with Ground Penetrating Radar. — Christiane Maierhofer; 15(3), 287-97 (2003).
Recent Research in Nondestructive Evaluation of Civil Infrastructures. — Peter C. Chang and S. Chi Liu; 15(3), 298-304 (2003).
Nondestructive Assessment of the Actual Compressive Strength of High-Strength Concrete. — Giovanni Pascale, Antonio Di Leo, and Virna Bonora; 15(5), 452-9 (2003).
Resistance Changes during Compression of Carbon Fiber Cement Composites. — Farhad Reza, Gordon B. Batson, Jerry A. Yamamuro, and Jong S. Lee; 15(5), 476-83 (2003).
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. —F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).

Numerical models

Nonstandard Tensile Coupon for Fiber-Reinforced Plastics. —P. D. Gosling and M. Saribiyik; 15(2), 108-17 (2003).

Parameters

Prepacked Grouting Process in Concrete Construction. — Somsak Swaddiwudhipong, Jing Zhang, and Seng Lip Lee; 15(6), 567-76 (2003).

Parking facilities

Thermal Movements in Concrete: Case Study of Multistory Underground Car Park. —Walid Aboumoussa and Magued Iskander; 15(6), 545-53 (2003).

Pavements

Evaluation of FWD Data for Determination of Layer Moduli of Pavements. —Yusuf Mehta and Reynaldo Roque; 15(1), 25-31 (2003).

Permeability

Permeation of High Performance Concrete. —M. I. Khan; 15(1), 84-92 (2003).
Correlation of Rheological Properties to Durability and Strength of Hardened Concrete. —S. E. Chidiac, O. Maadani, A. G. Razaqpur, and N. P. Mailvaganam; 15(4), 391-9 (2003).
Prepacked Grouting Process in Concrete Construction. — Somsak Swaddiwudhipong, Jing Zhang, and Seng Lip Lee; 15(6), 567-76 (2003).

Plastics

Development of Design Values for Wood-Plastic Composite Materials. —Steven A. Davidow and Kenneth J. Fridley; 15(5), 415-8 (2003).
Load-Duration Behavior of Wood-Plastic Composites. — Christopher W. Brandt and Kenneth J. Fridley; 15(6), 524-36 (2003).

Polymers

Quantitative Description of the Pull-Out Behavior of Crimped Yarns from Cement Matrix. —Alva Peled and Arnon Bentur; 15(6), 537-44 (2003).
Polymer Effects on the Vibration Damping Behavior of Cement. —W. G. Wong, Ping Fang, and J. K. Pan; 15(6), 554-6 (2003).

Porosity

Permeation of High Performance Concrete. — M. I. Khan; 15(1), 84-92 (2003).
Abrasion-Porosity-Strength Model for Fly Ash Concrete. — Cengiz Duran Atiş; 15(4), 408-10 (2003).

Portland cement

ASR Potentials of Glass Aggregates in Water-Glass Activated Fly Ash and Portland Cement Mortars. — Z. Xie, W. Xiang, and Y. Xi; 15(1), 67-74 (2003).

Probability

Life Cycle Modeling of Corrosion Affected Concrete Structures—Initiation. — C. Q. Li; 15(6), 594-601 (2003).

Pull-out resistance

Strength of Concrete Subjected to Pullout Load. — Lionello Bortolotti; 15(5), 491-5 (2003).
Quantitative Description of the Pull-Out Behavior of Crimped Yarns from Cement Matrix. — Alva Peled and Arnon Bentur; 15(6), 537-44 (2003).

Punching

Strength of Concrete Subjected to Pullout Load. — Lionello Bortolotti; 15(5), 491-5 (2003).

Radar

Nondestructive Evaluation of Concrete Infrastructure with Ground Penetrating Radar. —Christiane Maierhofer; 15(3), 287-97 (2003).

Recycling

Application of FTIR-ATR to Characterization of Bitumen Rejuvenator Diffusion. —Robert Karlsson and Ulf Isacsson; 15(2), 157-65 (2003).
Reuse of Incinerator Fly Ash in Soft Soil Stabilization. — Kuan-Yeow Show, Joo-Hwa Tay, and Anthony T. C. Goh; 15(4), 335-43 (2003).
Properties of Field Manufactured Cast-Concrete Products Utilizing Recycled Materials. —Tarun R. Naik, Rudolph N. Kraus, Yoon-moon Chun, Bruce W. Ramme, and Shiw S. Singh; 15(4), 400-7 (2003).
Crumb Rubber–Bitumen Interactions: Cold-Stage Optical Microscopy. —Panagiotis Frantzis; 15(5), 419-26 (2003).
Influence of Recycled Aggregate on Interfacial Transition Zone, Strength, Chloride Penetration and Carbonation of Concrete. —Nobuaki Otsuki, Shin-ichi Miyazato, and Wanchai Yodsudjai; 15(5), 443-51 (2003).
Municipal Solid Waste Fly Ash as a Blended Cement Material. —Chia-Chia Goh, Kuan-Yeow Show, and Hee-Kiat Cheong; 15(6), 513-23 (2003).

Reinforcement

Bond Behavior of Corroded Steel Reinforcement in Concrete Wrapped with Carbon Fiber Reinforced Polymer Sheets. —Khaled Soudki and Ted Sherwood; 15(4), 358-70 (2003).

Residual strength

Residual Life of Corroding Reinforced Concrete Structures in Marine Environment. —Andrés A. Torres-Acosta and Miguel Martínez-Madrid; 15(4), 344-53 (2003).

Rheological properties

Rheological Characterization of Heterogeneous Materials with Evolving Properties. —Laurent Arnaud; 15(3), 255-65 (2003).
Correlation of Rheological Properties to Durability and Strength of Hardened Concrete. —S. E. Chidiac, O. Maadani, A. G. Razaqpur, and N. P. Mailvaganam; 15(4), 391-9 (2003).

Roller compacted concrete

Cold Weather Placement of RCC. — Ying-Kit Choi, J. Douglas Neighbors, and Jamie D. Reichler; 15(2), 118-24 (2003).

Rubber

Crumb Rubber–Bitumen Interactions: Cold-Stage Optical Microscopy. — Panagiotis Frantzis; 15(5), 419-26 (2003).

Sand

Properties of Field Manufactured Cast-Concrete Products Utilizing Recycled Materials. — Tarun R. Naik, Rudolph N. Kraus, Yoon-moon Chun, Bruce W. Ramme, and Shiw S. Singh; 15(4), 400-7 (2003).

Sensors

Internal Strain Measurements in Concrete Elements by Fiber Optic Sensors. — Barbara Bonfiglioli and Giovanni Pascale; 15(2), 125-33 (2003).
Laboratory Evaluation of Fiber-Optic Sensors for Strain Monitoring. —Burong Zhang, Brahim Benmokrane, and Jean-Francois Nicole; 15(4), 381-90 (2003).
Dielectric Properties of Asphalt Pavement. —Edward J. Jaselskis, Jonas Grigas, and Algirdas Brilingas; 15(5), 427-34 (2003).

Shear modulus

Quantitative Effect of Elastomeric Modification on Binder Performance at Intermediate and High Temperatures. — Mostafa A. Elseifi, Gerardo W. Flintsch, and Imad L. Al-Qadi; 15(1), 32-40 (2003).

Shear resistance

Bond Geometry and Shear Strength of Steel Plates Bonded to Concrete on Heating. —Fernando J. F. G. Branco, António J. B. Tadeu, and José A. D. Nogueira; 15(6), 586-93 (2003).

Shrinkage

High-Volume Fly Ash Concrete with High Strength and Low Drying Shrinkage. —Cengiz Duran Atiş; 15(2), 153-6 (2003).
Tension Stiffening and Cracking of Steel Fiber-Reinforced Concrete. —Peter H. Bischoff; 15(2), 174-82 (2003).

Simulation

Simulation of Two-Dimensional Aggregate Distribution with Wall Effect. —J. J. Zheng, C. Q. Li, and L. Y. Zhao; 15(5), 506-10 (2003).

Slag

Substitution of Fly Ash, Slag, and Chemical Admixtures in Concrete Mix Designs. —Yingqin "Elaine" Jin and Nur Yazdani; 15(6), 602-8 (2003).

Sludge disposal

Thermal Stabilization of Iron-Rich Sludge for High Strength Aggregates. —Joo-Hwa Tay, Kuan-Yeow Show, Sze-Yunn Hong, Chao-Yu Chien, and Duu-Jong Lee; 15(6), 577-85 (2003).

Soil cement

Performance Characteristics of Soil-Cement from Industry Waste Binder. —Juanrong Zheng and Weizu Qin; 15(6), 616-8 (2003).

Soil stabilization

Reuse of Incinerator Fly Ash in Soft Soil Stabilization. — Kuan-Yeow Show, Joo-Hwa Tay, and Anthony T. C. Goh; 15(4), 335-43 (2003).

Soils
Formulation of Mix Design for Asphaltic Incorporation of Hydrocarbon Contaminated Soil. — R. A. Tarefder, M. E. Ruckgaber, M. Zaman, and D. Patton; 15(2), 166-73 (2003).

Solid wastes
Reuse of Incinerator Fly Ash in Soft Soil Stabilization. — Kuan-Yeow Show, Joo-Hwa Tay, and Anthony T. C. Goh; 15(4), 335-43 (2003).
Municipal Solid Waste Fly Ash as a Blended Cement Material. — Chia-Chia Goh, Kuan-Yeow Show, and Hee-Kiat Cheong; 15(6), 513-23 (2003).

Sorption
Correlation of Rheological Properties to Durability and Strength of Hardened Concrete. — S. E. Chidiac, O. Maadani, A. G. Razaqpur, and N. P. Mailvaganam; 15(4), 391-9 (2003).

Statistical analysis
Stress-Strain Relations and Modulus of Elasticity of Two-Stage Concrete. — Hakim S. Abdelgader and Jarosław Górski; 15(4), 329-34 (2003).

Steel
Atmospheric Corrosion Resistance of Structural Steels. — Pedro Albrecht and Terry T. Hall, Jr.; 15(1), 2-24 (2003).
Effectiveness of Impressed Current Technique to Simulate Corrosion of Steel Reinforcement in Concrete. — Tamer A. El Maaddawy and Khaled A. Soudki; 15(1), 41-7 (2003).
Stress Measurement and Defect Detection in Steel Strands by Guided Stress Waves. —Francesco Lanza di Scalea, Piervincenzo Rizzo, and Frieder Seible; 15(3), 219-27 (2003).
Location of Prestressing Steel Fractures in Concrete. — H. Scheel and B. Hillemeier; 15(3), 228-34 (2003).
Corrosion of Steel Bars in Cracked Concrete under Marine Environment. —Tarek Uddin Mohammed, Nobuaki Otsuki, and Hidenori Hamada; 15(5), 460-9 (2003).
Biaxial Failure Model for Fiber Reinforced Concrete. — Xiao Dong Hu, Robert Day, and Peter Dux; 15(6), 609-15 (2003).

Steel plates
Bond Geometry and Shear Strength of Steel Plates Bonded to Concrete on Heating. —Fernando J. F. G. Branco, António J. B. Tadeu, and José A. D. Nogueira; 15(6), 586-93 (2003).

Stiffening
Tension Stiffening and Cracking of Steel Fiber-Reinforced Concrete. —Peter H. Bischoff; 15(2), 174-82 (2003).

Stones
Properties of Field Manufactured Cast-Concrete Products Utilizing Recycled Materials. —Tarun R. Naik, Rudolph N. Kraus, Yoon-moon Chun, Bruce W. Ramme, and Shiw S. Singh; 15(4), 400-7 (2003).

Strain gages
Laboratory Evaluation of Fiber-Optic Sensors for Strain Monitoring. —Burong Zhang, Brahim Benmokrane, and Jean-Francois Nicole; 15(4), 381-90 (2003).

Strain measurement
Internal Strain Measurements in Concrete Elements by Fiber Optic Sensors. —Barbara Bonfiglioli and Giovanni Pascale; 15(2), 125-33 (2003).

Strength
High-Volume Fly Ash Concrete with High Strength and Low Drying Shrinkage. — Cengiz Duran Atiş; 15(2), 153-6 (2003).
Load-Duration Behavior of Wood-Plastic Composites. — Christopher W. Brandt and Kenneth J. Fridley; 15(6), 524-36 (2003).

Stress measurement
Stress Measurement and Defect Detection in Steel Strands by Guided Stress Waves. — Francesco Lanza di Scalea, Piervincenzo Rizzo, and Frieder Seible; 15(3), 219-27 (2003).

Stress strain relations
Stress-Strain Relations and Modulus of Elasticity of Two-Stage Concrete. — Hakim S. Abdelgader and Jarosław Górski; 15(4), 329-34 (2003).

Stress waves
Stress Measurement and Defect Detection in Steel Strands by Guided Stress Waves. — Francesco Lanza di Scalea, Piervincenzo Rizzo, and Frieder Seible; 15(3), 219-27 (2003).

Structural materials
Development of Design Values for Wood-Plastic Composite Materials. —Steven A. Davidow and Kenneth J. Fridley; 15(5), 415-8 (2003).

Structural stability
Recent Research in Nondestructive Evaluation of Civil Infrastructures. —Peter C. Chang and S. Chi Liu; 15(3), 298-304 (2003).

Structures
Atmospheric Corrosion Resistance of Structural Steels. — Pedro Albrecht and Terry T. Hall, Jr.; 15(1), 2-24 (2003).

Sulfates
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. I: Formulation. — Raphaël Tixier and Barzin Mobasher; 15(4), 305-13 (2003).
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. II: Comparison with Experiments. —Raphaël Tixier and Barzin Mobasher; 15(4), 314-22 (2003).

Sulfur
Alternative Cap Materials for Evaluating the Compressive Strength of Controlled Low-Strength Materials. — David Trejo, Kevin Folliard, and Lianxiang Du; 15(5), 484-90 (2003).

Temperature
Quantitative Effect of Elastomeric Modification on Binder Performance at Intermediate and High Temperatures. — Mostafa A. Elseifi, Gerardo W. Flintsch, and Imad L. Al-Qadi; 15(1), 32-40 (2003).
Effect of Temperature on Thermal Properties of High-Strength Concrete. —V. K. R. Kodur and M. A. Sultan; 15(2), 101-7 (2003).
Bond Geometry and Shear Strength of Steel Plates Bonded to Concrete on Heating. —Fernando J. F. G. Branco, António J. B. Tadeu, and José A. D. Nogueira; 15(6), 586-93 (2003).

Tendons
Ultrasonic Guided Waves for Inspection of Grouted Tendons and Bolts. —M. D. Beard, M. J. S. Lowe, and P. Cawley; 15(3), 212-8 (2003).

Tensile strength
Nonstandard Tensile Coupon for Fiber-Reinforced Plastics. —P. D. Gosling and M. Saribiyik; 15(2), 108-17 (2003).

Tension
Effects of Mineral Admixture on Properties of Young Concrete. — Xianyu Jin and Zongjin Li; 15(5), 435-42 (2003).

Textiles
Quantitative Description of the Pull-Out Behavior of Crimped Yarns from Cement Matrix. — Alva Peled and Arnon Bentur; 15(6), 537-44 (2003).

Thailand
Development of Bottom Ash as Pozzolanic Material. — Chai Jaturapitakkul and Raungrut Cheerarot; 15(1), 48-53 (2003).

Thermal factors
Laboratory Evaluation of Fiber-Optic Sensors for Strain Monitoring. — Burong Zhang, Brahim Benmokrane, and Jean-Francois Nicole; 15(4), 381-90 (2003).
Thermal Movements in Concrete: Case Study of Multistory Underground Car Park. — Walid Aboumoussa and Magued Iskander; 15(6), 545-53 (2003).
Thermal Stabilization of Iron-Rich Sludge for High Strength Aggregates. — Joo-Hwa Tay, Kuan-Yeow Show, Sze-Yunn Hong, Chao-Yu Chien, and Duu-Jong Lee; 15(6), 577-85 (2003).

Thermal properties
Effect of Temperature on Thermal Properties of High-Strength Concrete. —V. K. R. Kodur and M. A. Sultan; 15(2), 101-7 (2003).

Transverse waves
Determination of Early Age Mortar and Concrete Strength by Ultrasonic Wave Reflections. —Thomas Voigt, Yilmaz Akkaya, and Surendra P. Shah; 15(3), 247-54 (2003).

Ultrasonic tests
Determination of Early Age Mortar and Concrete Strength by Ultrasonic Wave Reflections. —Thomas Voigt, Yilmaz Akkaya, and Surendra P. Shah; 15(3), 247-54 (2003).

Underground structures
Thermal Movements in Concrete: Case Study of Multistory Underground Car Park. —Walid Aboumoussa and Magued Iskander; 15(6), 545-53 (2003).

Vibration
Correlation of Rheological Properties to Durability and Strength of Hardened Concrete. —S. E. Chidiac, O. Maadani, A. G. Razaqpur, and N. P. Mailvaganam; 15(4), 391-9 (2003).
Polymer Effects on the Vibration Damping Behavior of Cement. —W. G. Wong, Ping Fang, and J. K. Pan; 15(6), 554-6 (2003).
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. —F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).

Viscoelasticity
Method for Performing Accelerated Characterization of Viscoelastic Constitutive Behavior of Asphaltic Concrete. —Curtis F. Berthelot, David H. Allen, and Chad R. Searcy; 15(5), 496-505 (2003).

Viscosity
Prepacked Grouting Process in Concrete Construction. — Somsak Swaddiwudhipong, Jing Zhang, and Seng Lip Lee; 15(6), 567-76 (2003).

Vortex shedding
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. — F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).
Waste management
Thermal Stabilization of Iron-Rich Sludge for High Strength Aggregates. — Joo-Hwa Tay, Kuan-Yeow Show, Sze-Yunn Hong, Chao-Yu Chien, and Duu-Jong Lee; 15(6), 577-85 (2003).
Wave reflection
Determination of Early Age Mortar and Concrete Strength by Ultrasonic Wave Reflections. — Thomas Voigt, Yilmaz Akkaya, and Surendra P. Shah; 15(3), 247-54 (2003).
Weathering
Atmospheric Corrosion Resistance of Structural Steels. — Pedro Albrecht and Terry T. Hall, Jr.; 15(1), 2-24 (2003).
Weight
Evaluation of FWD Data for Determination of Layer Moduli of Pavements. — Yusuf Mehta and Reynaldo Roque; 15(1), 25-31 (2003).
Wind
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. — F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).
Wood
Effect of Waveform and Loading Sequence on Low-Cycle Compressive Fatigue Life of Spruce. — M. Gong and I. Smith; 15(1), 93-9 (2003).
Development of Design Values for Wood-Plastic Composite Materials. — Steven A. Davidow and Kenneth J. Fridley; 15(5), 415-8 (2003).
Load-Duration Behavior of Wood-Plastic Composites. — Christopher W. Brandt and Kenneth J. Fridley; 15(6), 524-36 (2003).

Author Index

Ababneh, Ayman
Chloride Penetration in Nonsaturated Concrete. —Ayman Ababneh, Farid Benboudjema, and Yunping Xi; 15(2), 183-91 (2003).

Abdelgader, Hakim S.
Stress-Strain Relations and Modulus of Elasticity of Two-Stage Concrete. —Hakim S. Abdelgader and Jarosław Górski; 15(4), 329-34 (2003).

Aboumoussa, Walid
Thermal Movements in Concrete: Case Study of Multistory Underground Car Park. —Walid Aboumoussa and Magued Iskander; 15(6), 545-53 (2003).

Abubakar, Sanni A.
Maize-cob Ash As Filler in Concrete. —Felix F. Udoeyo and Sanni A. Abubakar; 15(2), 205-8 (2003).

Akkaya, Yilmaz
Determination of Early Age Mortar and Concrete Strength by Ultrasonic Wave Reflections. —Thomas Voigt, Yilmaz Akkaya, and Surendra P. Shah; 15(3), 247-54 (2003).

Aktan, A. Emin
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. —F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).

Albrecht, Pedro
Atmospheric Corrosion Resistance of Structural Steels. — Pedro Albrecht and Terry T. Hall, Jr.; 15(1), 2-24 (2003).

Allen, David H.
Method for Performing Accelerated Characterization of Viscoelastic Constitutive Behavior of Asphaltic Concrete. —Curtis F. Berthelot, David H. Allen, and Chad R. Searcy; 15(5), 496-505 (2003).

Al-Qadi, Imad L.
Quantitative Effect of Elastomeric Modification on Binder Performance at Intermediate and High Temperatures. — Mostafa A. Elseifi, Gerardo W. Flintsch, and Imad L. Al-Qadi; 15(1), 32-40 (2003).

Al-Tamimi, A. K.
Assessment of Self-Compacting Concrete Immersed in Acidic Solutions. —A. K. Al-Tamimi and M. Sonebi; 15(4), 354-7 (2003).

Arnaud, Laurent
Rheological Characterization of Heterogeneous Materials with Evolving Properties. —Laurent Arnaud; 15(3), 255-65 (2003).

Atiş, C. D.
Nondestructive Testing of Mortar Specimens Using the Microwave Free-Space Method. —S. N. Kharkovsky and C. D. Atiş; 15(2), 200-4 (2003).

Atiş, Cengiz Duran
High-Volume Fly Ash Concrete with High Strength and Low Drying Shrinkage. — Cengiz Duran Atiş; 15(2), 153-6 (2003).
Abrasion-Porosity-Strength Model for Fly Ash Concrete. — Cengiz Duran Atiş; 15(4), 408-10 (2003).
Discussion of "Correlations between Mechanical Properties of High-Strength Concrete" by M. A. Rashid, M. A. Mansur, and P. Paramasivam. — Cengiz Duran Atiş and Ali Hamza Tanrikulu; 15(5), 511-2 (2003).

Barrish, Raymond A.
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. — F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).

Batson, Gordon B.
Resistance Changes during Compression of Carbon Fiber Cement Composites. — Farhad Reza, Gordon B. Batson, Jerry A. Yamamuro, and Jong S. Lee; 15(5), 476-83 (2003).

Beard, M. D.
Ultrasonic Guided Waves for Inspection of Grouted Tendons and Bolts. —M. D. Beard, M. J. S. Lowe, and P. Cawley; 15(3), 212-8 (2003).

Benboudjema, Farid
Chloride Penetration in Nonsaturated Concrete. —Ayman Ababneh, Farid Benboudjema, and Yunping Xi; 15(2), 183-91 (2003).

Benmokrane, Brahim
Laboratory Evaluation of Fiber-Optic Sensors for Strain Monitoring. —Burong Zhang, Brahim Benmokrane, and Jean-Francois Nicole; 15(4), 381-90 (2003).

Bentur, Arnon
Closure to "Cementitious Materials— Nine Millennia and a New Century: Past, Present, and Future" by Arnon Bentur. —Arnon Bentur; 15(4), 412 (2003).
Quantitative Description of the Pull-Out Behavior of Crimped Yarns from Cement Matrix. —Alva Peled and Arnon Bentur; 15(6), 537-44 (2003).

Berthelot, Curtis F.
Method for Performing Accelerated Characterization of Viscoelastic Constitutive Behavior of Asphaltic Concrete. —Curtis F. Berthelot, David H. Allen, and Chad R. Searcy; 15(5), 496-505 (2003).

Bischoff, Peter H.
Tension Stiffening and Cracking of Steel Fiber-Reinforced Concrete. —Peter H. Bischoff; 15(2), 174-82 (2003).

Bonfiglioli, Barbara
Internal Strain Measurements in Concrete Elements by Fiber Optic Sensors. —Barbara Bonfiglioli and Giovanni Pascale; 15(2), 125-33 (2003).

Bonora, Virna
Nondestructive Assessment of the Actual Compressive Strength of High-Strength Concrete. — Giovanni Pascale, Antonio Di Leo, and Virna Bonora; 15(5), 452-9 (2003).

Bortolotti, Lionello
Strength of Concrete Subjected to Pullout Load. — Lionello Bortolotti; 15(5), 491-5 (2003).

Branco, Fernando J. F. G.
Bond Geometry and Shear Strength of Steel Plates Bonded to Concrete on Heating. — Fernando J. F. G. Branco, António J. B. Tadeu, and José A. D. Nogueira; 15(6), 586-93 (2003).

Brandt, Christopher W.
Load-Duration Behavior of Wood-Plastic Composites. — Christopher W. Brandt and Kenneth J. Fridley; 15(6), 524-36 (2003).

Brilingas, Algirdas
Dielectric Properties of Asphalt Pavement. — Edward J. Jaselskis, Jonas Grigas, and Algirdas Brilingas; 15(5), 427-34 (2003).

Carino, Nicholas J.
Preliminary Thermography Studies for Quality Control of Concrete Structures Strengthened with Fiber-Reinforced Polymer Composites. —Monica A. Starnes, Nicholas J. Carino, and Eduardo A. Kausel; 15(3), 266-73 (2003).

Catbas, F. Necati
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. —F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).

Cawley, P.
Ultrasonic Guided Waves for Inspection of Grouted Tendons and Bolts. —M. D. Beard, M. J. S. Lowe, and P. Cawley; 15(3), 212-8 (2003).

Chang, Peter C.
Recent Research in Nondestructive Evaluation of Civil Infrastructures. —Peter C. Chang and S. Chi Liu; 15(3), 298-304 (2003).

Cheerarot, Raungrut
Development of Bottom Ash as Pozzolanic Material. — Chai Jaturapitakkul and Raungrut Cheerarot; 15(1), 48-53 (2003).

Cheong, Hee-Kiat
Municipal Solid Waste Fly Ash as a Blended Cement Material. —Chia-Chia Goh, Kuan-Yeow Show, and Hee-Kiat Cheong; 15(6), 513-23 (2003).

Chidiac, S. E.
Correlation of Rheological Properties to Durability and Strength of Hardened Concrete. —S. E. Chidiac, O. Maadani, A. G. Razaqpur, and N. P. Mailvaganam; 15(4), 391-9 (2003).

Chien, Chao-Yu
Thermal Stabilization of Iron-Rich Sludge for High Strength Aggregates. — Joo-Hwa Tay, Kuan-Yeow Show, Sze-Yunn Hong, Chao-Yu Chien, and Duu-Jong Lee; 15(6), 577-85 (2003).

Choi, Ying-Kit
Cold Weather Placement of RCC. — Ying-Kit Choi, J. Douglas Neighbors, and Jamie D. Reichler; 15(2), 118-24 (2003).

Chun, Yoon-moon
Properties of Field Manufactured Cast-Concrete Products Utilizing Recycled Materials. — Tarun R. Naik, Rudolph N. Kraus, Yoon-moon Chun, Bruce W. Ramme, and Shiw S. Singh; 15(4), 400-7 (2003).

Colombo, Ing. S.
Assessing Damage of Reinforced Concrete Beam Using "*b* -value" Analysis of Acoustic Emission Signals. — Ing. S. Colombo, I. G. Main, and M. C. Forde; 15(3), 280-6 (2003).

Czor, L. J.
100-mm-Diameter Mold Used with Superpave Gyratory Compactor. — N. M. Jackson and L. J. Czor; 15(1), 60-6 (2003).

Daniels, John L.
Durability of Boston Blue Clay in Waste Containment Applications. —John L. Daniels, Hilary I. Inyang, and Iskandar K. Iskandar; 15(2), 144-52 (2003).

Davidow, Steven A.
Development of Design Values for Wood-Plastic Composite Materials. —Steven A. Davidow and Kenneth J. Fridley; 15(5), 415-8 (2003).

Day, Robert
Biaxial Failure Model for Fiber Reinforced Concrete. — Xiao Dong Hu, Robert Day, and Peter Dux; 15(6), 609-15 (2003).

Di Leo, Antonio
Nondestructive Assessment of the Actual Compressive Strength of High-Strength Concrete. —Giovanni Pascale, Antonio Di Leo, and Virna Bonora; 15(5), 452-9 (2003).

Dong, Yue Xing
Damage Model Based Reinforced-Concrete Element. — Chee Kiong Soh, Yu Liu, Yue Xing Dong, and Xin Zheng Lu; 15(4), 371-80 (2003).

Du, Lianxiang
Alternative Cap Materials for Evaluating the Compressive Strength of Controlled Low-Strength Materials. — David Trejo, Kevin Folliard, and Lianxiang Du; 15(5), 484-90 (2003).

Dux, Peter
Biaxial Failure Model for Fiber Reinforced Concrete. — Xiao Dong Hu, Robert Day, and Peter Dux; 15(6), 609-15 (2003).

El Maaddawy, Tamer A.
Effectiveness of Impressed Current Technique to Simulate Corrosion of Steel Reinforcement in Concrete. — Tamer A. El Maaddawy and Khaled A. Soudki; 15(1), 41-7 (2003).

Elseifi, Mostafa A.
Quantitative Effect of Elastomeric Modification on Binder Performance at Intermediate and High Temperatures. — Mostafa A. Elseifi, Gerardo W. Flintsch, and Imad L. Al-Qadi; 15(1), 32-40 (2003).

Fang, Ping
Polymer Effects on the Vibration Damping Behavior of Cement. — W. G. Wong, Ping Fang, and J. K. Pan; 15(6), 554-6 (2003).

Finck, Florian
Signal-Based Acoustic Emission Techniques in Civil Engineering. — Christian U. Grosse, Hans W. Reinhardt, and Florian Finck; 15(3), 274-9 (2003).

Flintsch, Gerardo W.
Quantitative Effect of Elastomeric Modification on Binder Performance at Intermediate and High Temperatures. — Mostafa A. Elseifi, Gerardo W. Flintsch, and Imad L. Al-Qadi; 15(1), 32-40 (2003).

Folliard, Kevin
Alternative Cap Materials for Evaluating the Compressive Strength of Controlled Low-Strength Materials. — David Trejo, Kevin Folliard, and Lianxiang Du; 15(5), 484-90 (2003).

Forde, M. C.
Assessing Damage of Reinforced Concrete Beam Using "*b* -value" Analysis of Acoustic Emission Signals. —Ing. S. Colombo, I. G. Main, and M. C. Forde; 15(3), 280-6 (2003).

Frantzis, Panagiotis
Crumb Rubber–Bitumen Interactions: Cold-Stage Optical Microscopy. —Panagiotis Frantzis; 15(5), 419-26 (2003).

Fridley, Kenneth J.
Development of Design Values for Wood-Plastic Composite Materials. —Steven A. Davidow and Kenneth J. Fridley; 15(5), 415-8 (2003).
Load-Duration Behavior of Wood-Plastic Composites. — Christopher W. Brandt and Kenneth J. Fridley; 15(6), 524-36 (2003).

Goh, Anthony T. C.
Reuse of Incinerator Fly Ash in Soft Soil Stabilization. — Kuan-Yeow Show, Joo-Hwa Tay, and Anthony T. C. Goh; 15(4), 335-43 (2003).

Goh, Chia-Chia
Municipal Solid Waste Fly Ash as a Blended Cement Material. —Chia-Chia Goh, Kuan-Yeow Show, and Hee-Kiat Cheong; 15(6), 513-23 (2003).

Gong, M.
Effect of Waveform and Loading Sequence on Low-Cycle Compressive Fatigue Life of Spruce. —M. Gong and I. Smith; 15(1), 93-9 (2003).

Górski, Jarosław
Stress-Strain Relations and Modulus of Elasticity of Two-Stage Concrete. —Hakim S. Abdelgader and Jarosław Górski; 15(4), 329-34 (2003).

Gosling, P. D.
Nonstandard Tensile Coupon for Fiber-Reinforced Plastics. —P. D. Gosling and M. Saribiyik; 15(2), 108-17 (2003).

Grigas, Jonas
Dielectric Properties of Asphalt Pavement. —Edward J. Jaselskis, Jonas Grigas, and Algirdas Brilingas; 15(5), 427-34 (2003).

Grimmelsman, Kirk A.
Nondestructive Evaluation of Tuned-Mass-Damper-Type Vibration Absorbers Using Vibration Signatures. —F. Necati Catbas, Kirk A. Grimmelsman, Raymond A. Barrish, and A. Emin Aktan; 15(6), 557-66 (2003).

Grosse, Christian U.
Signal-Based Acoustic Emission Techniques in Civil Engineering. — Christian U. Grosse, Hans W. Reinhardt, and Florian Finck; 15(3), 274-9 (2003).

Hall, Terry T., Jr.
Atmospheric Corrosion Resistance of Structural Steels. — Pedro Albrecht and Terry T. Hall, Jr.; 15(1), 2-24 (2003).

Hamada, Hidenori
Corrosion of Steel Bars in Cracked Concrete under Marine Environment. — Tarek Uddin Mohammed, Nobuaki Otsuki, and Hidenori Hamada; 15(5), 460-9 (2003).

Hillemeier, B.
Location of Prestressing Steel Fractures in Concrete. — H. Scheel and B. Hillemeier; 15(3), 228-34 (2003).

Hong, Sze-Yunn
Thermal Stabilization of Iron-Rich Sludge for High Strength Aggregates. — Joo-Hwa Tay, Kuan-Yeow Show, Sze-Yunn Hong, Chao-Yu Chien, and Duu-Jong Lee; 15(6), 577-85 (2003).

Hu, Xiao Dong
Biaxial Failure Model for Fiber Reinforced Concrete. — Xiao Dong Hu, Robert Day, and Peter Dux; 15(6), 609-15 (2003).

Inyang, Hilary I.
Durability of Boston Blue Clay in Waste Containment Applications. —John L. Daniels, Hilary I. Inyang, and Iskandar K. Iskandar; 15(2), 144-52 (2003).

Isacsson, Ulf
Application of FTIR-ATR to Characterization of Bitumen Rejuvenator Diffusion. —Robert Karlsson and Ulf Isacsson; 15(2), 157-65 (2003).

Iskandar, Iskandar K.
Durability of Boston Blue Clay in Waste Containment Applications. —John L. Daniels, Hilary I. Inyang, and Iskandar K. Iskandar; 15(2), 144-52 (2003).

Iskander, Magued
Thermal Movements in Concrete: Case Study of Multistory Underground Car Park. —Walid Aboumoussa and Magued Iskander; 15(6), 545-53 (2003).

Jackson, N. M.
100-mm-Diameter Mold Used with Superpave Gyratory Compactor. —N. M. Jackson and L. J. Czor; 15(1), 60-6 (2003).

Jaselskis, Edward J.
Dielectric Properties of Asphalt Pavement. —Edward J. Jaselskis, Jonas Grigas, and Algirdas Brilingas; 15(5), 427-34 (2003).

Jaturapitakkul, Chai
Development of Bottom Ash as Pozzolanic Material. — Chai Jaturapitakkul and Raungrut Cheerarot; 15(1), 48-53 (2003).
Cementing Material from Calcium Carbide Residue-Rice Husk Ash. —Chai Jaturapitakkul and Boonmark Roongreung; 15(5), 470-5 (2003).

Jin, Xianyu
Effects of Mineral Admixture on Properties of Young Concrete. —Xianyu Jin and Zongjin Li; 15(5), 435-42 (2003).

Jin, Yingqin "Elaine"
Substitution of Fly Ash, Slag, and Chemical Admixtures in Concrete Mix Designs. — Yingqin "Elaine" Jin and Nur Yazdani; 15(6), 602-8 (2003).

Karlsson, Robert
Application of FTIR-ATR to Characterization of Bitumen Rejuvenator Diffusion. — Robert Karlsson and Ulf Isacsson; 15(2), 157-65 (2003).

Kausel, Eduardo A.
Preliminary Thermography Studies for Quality Control of Concrete Structures Strengthened with Fiber-Reinforced Polymer Composites. — Monica A. Starnes, Nicholas J. Carino, and Eduardo A. Kausel; 15(3), 266-73 (2003).

Khan, M. I.
Permeation of High Performance Concrete. — M. I. Khan; 15(1), 84-92 (2003).

Kharkovsky, S. N.
Nondestructive Testing of Mortar Specimens Using the Microwave Free-Space Method. —S. N. Kharkovsky and C. D. Atiş; 15(2), 200-4 (2003).

Kim, Yong-Rak
Fatigue and Healing Characterization of Asphalt Mixtures. — Yong-Rak Kim, D. N. Little, and R. L. Lytton; 15(1), 75-83 (2003).

Kodur, V. K. R.
Effect of Temperature on Thermal Properties of High-Strength Concrete. —V. K. R. Kodur and M. A. Sultan; 15(2), 101-7 (2003).

Kraus, Rudolph N.
Properties of Field Manufactured Cast-Concrete Products Utilizing Recycled Materials. —Tarun R. Naik, Rudolph N. Kraus, Yoon-moon Chun, Bruce W. Ramme, and Shiw S. Singh; 15(4), 400-7 (2003).

Krause, Martin
Ultrasonic Imaging of Concrete Elements Using Reconstruction by Synthetic Aperture Focusing Technique. —Martin Schickert, Martin Krause, and Wolfgang Müller; 15(3), 235-46 (2003).

Lanza di Scalea, Francesco
Stress Measurement and Defect Detection in Steel Strands by Guided Stress Waves. —Francesco Lanza di Scalea, Piervincenzo Rizzo, and Frieder Seible; 15(3), 219-27 (2003).

Lee, Duu-Jong
Thermal Stabilization of Iron-Rich Sludge for High Strength Aggregates. —Joo-Hwa Tay, Kuan-Yeow Show, Sze-Yunn Hong, Chao-Yu Chien, and Duu-Jong Lee; 15(6), 577-85 (2003).

Lee, Jong S.
Resistance Changes during Compression of Carbon Fiber Cement Composites. —Farhad Reza, Gordon B. Batson, Jerry A. Yamamuro, and Jong S. Lee; 15(5), 476-83 (2003).

Lee, Seng Lip
Prepacked Grouting Process in Concrete Construction. — Somsak Swaddiwudhipong, Jing Zhang, and Seng Lip Lee; 15(6), 567-76 (2003).

Li, C. Q.
Simulation of Two-Dimensional Aggregate Distribution with Wall Effect. —J. J. Zheng, C. Q. Li, and L. Y. Zhao; 15(5), 506-10 (2003).
Life Cycle Modeling of Corrosion Affected Concrete Structures—Initiation. —C. Q. Li; 15(6), 594-601 (2003).

Li, Zongjin
Effects of Mineral Admixture on Properties of Young Concrete. — Xianyu Jin and Zongjin Li; 15(5), 435-42 (2003).

Little, D. N.
Fatigue and Healing Characterization of Asphalt Mixtures. — Yong-Rak Kim, D. N. Little, and R. L. Lytton; 15(1), 75-83 (2003).

Liu, S. Chi
Recent Research in Nondestructive Evaluation of Civil Infrastructures. — Peter C. Chang and S. Chi Liu; 15(3), 298-304 (2003).

Liu, Yu
Damage Model Based Reinforced-Concrete Element. — Chee Kiong Soh, Yu Liu, Yue Xing Dong, and Xin Zheng Lu; 15(4), 371-80 (2003).

Lowe, M. J. S.
Ultrasonic Guided Waves for Inspection of Grouted Tendons and Bolts. — M. D. Beard, M. J. S. Lowe, and P. Cawley; 15(3), 212-8 (2003).

Lu, Xin Zheng
Damage Model Based Reinforced-Concrete Element. — Chee Kiong Soh, Yu Liu, Yue Xing Dong, and Xin Zheng Lu; 15(4), 371-80 (2003).

Lytton, R. L.
Fatigue and Healing Characterization of Asphalt Mixtures. — Yong-Rak Kim, D. N. Little, and R. L. Lytton; 15(1), 75-83 (2003).

Maadani, O.
Correlation of Rheological Properties to Durability and Strength of Hardened Concrete. —S. E. Chidiac, O. Maadani, A. G. Razaqpur, and N. P. Mailvaganam; 15(4), 391-9 (2003).

Maierhofer, Christiane
Nondestructive Evaluation of Concrete Infrastructure with Ground Penetrating Radar. —Christiane Maierhofer; 15(3), 287-97 (2003).

Mailvaganam, N. P.
Correlation of Rheological Properties to Durability and Strength of Hardened Concrete. —S. E. Chidiac, O. Maadani, A. G. Razaqpur, and N. P. Mailvaganam; 15(4), 391-9 (2003).

Main, I. G.
Assessing Damage of Reinforced Concrete Beam Using "*b* -value" Analysis of Acoustic Emission Signals. —Ing. S. Colombo, I. G. Main, and M. C. Forde; 15(3), 280-6 (2003).

Marchand, Jacques
Hydration Mechanisms, Microstructure, and Mechanical Properties of Mortars Prepared with Mixed Binder Cement Slurry-Asphalt Emulsion. — Nadia Pouliot, Jacques Marchand, and Michel Pigeon; 15(1), 54-9 (2003).

Martínez-Madrid, Miguel
Residual Life of Corroding Reinforced Concrete Structures in Marine Environment. —Andrés A. Torres-Acosta and Miguel Martínez-Madrid; 15(4), 344-53 (2003).

Mehta, Yusuf
Evaluation of FWD Data for Determination of Layer Moduli of Pavements. —Yusuf Mehta and Reynaldo Roque; 15(1), 25-31 (2003).

Miyazato, Shin-ichi
Influence of Recycled Aggregate on Interfacial Transition Zone, Strength, Chloride Penetration and Carbonation of Concrete. — Nobuaki Otsuki, Shin-ichi Miyazato, and Wanchai Yodsudjai; 15(5), 443-51 (2003).

Mobasher, Barzin
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. I: Formulation. — Raphaël Tixier and Barzin Mobasher; 15(4), 305-13 (2003).
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. II: Comparison with Experiments. — Raphaël Tixier and Barzin Mobasher; 15(4), 314-22 (2003).

Mohammed, Tarek Uddin
Corrosion of Steel Bars in Cracked Concrete under Marine Environment. — Tarek Uddin Mohammed, Nobuaki Otsuki, and Hidenori Hamada; 15(5), 460-9 (2003).

Müller, Wolfgang
Ultrasonic Imaging of Concrete Elements Using Reconstruction by Synthetic Aperture Focusing Technique. — Martin Schickert, Martin Krause, and Wolfgang Müller; 15(3), 235-46 (2003).

Naik, Tarun R.
Properties of Field Manufactured Cast-Concrete Products Utilizing Recycled Materials. —Tarun R. Naik, Rudolph N. Kraus, Yoon-moon Chun, Bruce W. Ramme, and Shiw S. Singh; 15(4), 400-7 (2003).

Nanni, Antonio
Editor's Note. —Antonio Nanni; 15(1), 1 (2003).

Neighbors, J. Douglas
Cold Weather Placement of RCC. —Ying-Kit Choi, J. Douglas Neighbors, and Jamie D. Reichler; 15(2), 118-24 (2003).

Nicole, Jean-Francois
Laboratory Evaluation of Fiber-Optic Sensors for Strain Monitoring. —Burong Zhang, Brahim Benmokrane, and Jean-Francois Nicole; 15(4), 381-90 (2003).

Nogueira, José A. D.
Bond Geometry and Shear Strength of Steel Plates Bonded to Concrete on Heating. —Fernando J. F. G. Branco, António J. B. Tadeu, and José A. D. Nogueira; 15(6), 586-93 (2003).

Otsuki, Nobuaki
Influence of Recycled Aggregate on Interfacial Transition Zone, Strength, Chloride Penetration and Carbonation of Concrete. —Nobuaki Otsuki, Shin-ichi Miyazato, and Wanchai Yodsudjai; 15(5), 443-51 (2003).
Corrosion of Steel Bars in Cracked Concrete under Marine Environment. —Tarek Uddin Mohammed, Nobuaki Otsuki, and Hidenori Hamada; 15(5), 460-9 (2003).

Pan, J. K.
Polymer Effects on the Vibration Damping Behavior of Cement. —W. G. Wong, Ping Fang, and J. K. Pan; 15(6), 554-6 (2003).

Pascale, Giovanni
Internal Strain Measurements in Concrete Elements by Fiber Optic Sensors. — Barbara Bonfiglioli and Giovanni Pascale; 15(2), 125-33 (2003).
Nondestructive Assessment of the Actual Compressive Strength of High-Strength Concrete. — Giovanni Pascale, Antonio Di Leo, and Virna Bonora; 15(5), 452-9 (2003).

Patton, D.
Formulation of Mix Design for Asphaltic Incorporation of Hydrocarbon Contaminated Soil. — R. A. Tarefder, M. E. Ruckgaber, M. Zaman, and D. Patton; 15(2), 166-73 (2003).

Peled, Alva
Processing Effects in Cementitious Composites: Extrusion and Casting. — Alva Peled and Surendra P. Shah; 15(2), 192-9 (2003).
Quantitative Description of the Pull-Out Behavior of Crimped Yarns from Cement Matrix. — Alva Peled and Arnon Bentur; 15(6), 537-44 (2003).

Pigeon, Michel
Hydration Mechanisms, Microstructure, and Mechanical Properties of Mortars Prepared with Mixed Binder Cement Slurry-Asphalt Emulsion. — Nadia Pouliot, Jacques Marchand, and Michel Pigeon; 15(1), 54-9 (2003).

Popovics, John S.
Nondestructive Evaluation: Past, Present, and Future. — John S. Popovics; 15(3), 211 (2003).

Pouliot, Nadia
Hydration Mechanisms, Microstructure, and Mechanical Properties of Mortars Prepared with Mixed Binder Cement Slurry-Asphalt Emulsion. — Nadia Pouliot, Jacques Marchand, and Michel Pigeon; 15(1), 54-9 (2003).

Qin, Weizu
Performance Characteristics of Soil-Cement from Industry Waste Binder. —Juanrong Zheng and Weizu Qin; 15(6), 616-8 (2003).

Ramme, Bruce W.
Properties of Field Manufactured Cast-Concrete Products Utilizing Recycled Materials. —Tarun R. Naik, Rudolph N. Kraus, Yoon-moon Chun, Bruce W. Ramme, and Shiw S. Singh; 15(4), 400-7 (2003).

Razaqpur, A. G.
Correlation of Rheological Properties to Durability and Strength of Hardened Concrete. —S. E. Chidiac, O. Maadani, A. G. Razaqpur, and N. P. Mailvaganam; 15(4), 391-9 (2003).

Reichler, Jamie D.
Cold Weather Placement of RCC. —Ying-Kit Choi, J. Douglas Neighbors, and Jamie D. Reichler; 15(2), 118-24 (2003).

Reinhardt, Hans W.
Signal-Based Acoustic Emission Techniques in Civil Engineering. —Christian U. Grosse, Hans W. Reinhardt, and Florian Finck; 15(3), 274-9 (2003).

Reza, Farhad
Resistance Changes during Compression of Carbon Fiber Cement Composites. —Farhad Reza, Gordon B. Batson, Jerry A. Yamamuro, and Jong S. Lee; 15(5), 476-83 (2003).

Richard, Ralph M.
Discussion of "Weld Acceptance Criteria for Seismically Loaded Steel Structures" by William Mohr. — Ralph M. Richard; 15(2), 209-10 (2003).

Riddington, John R.
Mechanical Properties of Lead Alloys in Compression. — John R. Riddington and Manjinder K. Sahota; 15(4), 323-8 (2003).

Rizzo, Piervincenzo
Stress Measurement and Defect Detection in Steel Strands by Guided Stress Waves. — Francesco Lanza di Scalea, Piervincenzo Rizzo, and Frieder Seible; 15(3), 219-27 (2003).

Roongreung, Boonmark
Cementing Material from Calcium Carbide Residue-Rice Husk Ash. — Chai Jaturapitakkul and Boonmark Roongreung; 15(5), 470-5 (2003).

Roque, Reynaldo
Evaluation of FWD Data for Determination of Layer Moduli of Pavements. — Yusuf Mehta and Reynaldo Roque; 15(1), 25-31 (2003).

Ruckgaber, M. E.
Formulation of Mix Design for Asphaltic Incorporation of Hydrocarbon Contaminated Soil. —R. A. Tarefder, M. E. Ruckgaber, M. Zaman, and D. Patton; 15(2), 166-73 (2003).

Sahota, Manjinder K.
Mechanical Properties of Lead Alloys in Compression. — John R. Riddington and Manjinder K. Sahota; 15(4), 323-8 (2003).

Saribiyik, M.
Nonstandard Tensile Coupon for Fiber-Reinforced Plastics. —P. D. Gosling and M. Saribiyik; 15(2), 108-17 (2003).

Scheel, H.
Location of Prestressing Steel Fractures in Concrete. — H. Scheel and B. Hillemeier; 15(3), 228-34 (2003).

Schickert, Martin
Ultrasonic Imaging of Concrete Elements Using Reconstruction by Synthetic Aperture Focusing Technique. —Martin Schickert, Martin Krause, and Wolfgang Müller; 15(3), 235-46 (2003).

Searcy, Chad R.
Method for Performing Accelerated Characterization of Viscoelastic Constitutive Behavior of Asphaltic Concrete. —Curtis F. Berthelot, David H. Allen, and Chad R. Searcy; 15(5), 496-505 (2003).

Seible, Frieder
Stress Measurement and Defect Detection in Steel Strands by Guided Stress Waves. —Francesco Lanza di Scalea, Piervincenzo Rizzo, and Frieder Seible; 15(3), 219-27 (2003).

Shah, Surendra P.
Processing Effects in Cementitious Composites: Extrusion and Casting. —Alva Peled and Surendra P. Shah; 15(2), 192-9 (2003).
Determination of Early Age Mortar and Concrete Strength by Ultrasonic Wave Reflections. —Thomas Voigt, Yilmaz Akkaya, and Surendra P. Shah; 15(3), 247-54 (2003).

Sherwood, Ted
Bond Behavior of Corroded Steel Reinforcement in Concrete Wrapped with Carbon Fiber Reinforced Polymer Sheets. — Khaled Soudki and Ted Sherwood; 15(4), 358-70 (2003).

Show, Kuan-Yeow
Reuse of Incinerator Fly Ash in Soft Soil Stabilization. — Kuan-Yeow Show, Joo-Hwa Tay, and Anthony T. C. Goh; 15(4), 335-43 (2003).
Municipal Solid Waste Fly Ash as a Blended Cement Material. — Chia-Chia Goh, Kuan-Yeow Show, and Hee-Kiat Cheong; 15(6), 513-23 (2003).
Thermal Stabilization of Iron-Rich Sludge for High Strength Aggregates. — Joo-Hwa Tay, Kuan-Yeow Show, Sze-Yunn Hong, Chao-Yu Chien, and Duu-Jong Lee; 15(6), 577-85 (2003).

Singh, Shiw S.
Properties of Field Manufactured Cast-Concrete Products Utilizing Recycled Materials. — Tarun R. Naik, Rudolph N. Kraus, Yoon-moon Chun, Bruce W. Ramme, and Shiw S. Singh; 15(4), 400-7 (2003).

Sivakumar, K.
Discussion of "Cementitious Materials—Nine Millennia and a New Century: Past, Present, and Future" by Arnon Bentur. —K. Sivakumar; 15(4), 411-2 (2003).

Smith, I.
Effect of Waveform and Loading Sequence on Low-Cycle Compressive Fatigue Life of Spruce. —M. Gong and I. Smith; 15(1), 93-9 (2003).

Soh, Chee Kiong
Damage Model Based Reinforced-Concrete Element. — Chee Kiong Soh, Yu Liu, Yue Xing Dong, and Xin Zheng Lu; 15(4), 371-80 (2003).

Sonebi, M.
Assessment of Self-Compacting Concrete Immersed in Acidic Solutions. —A. K. Al-Tamimi and M. Sonebi; 15(4), 354-7 (2003).

Soudki, Khaled
Bond Behavior of Corroded Steel Reinforcement in Concrete Wrapped with Carbon Fiber Reinforced Polymer Sheets. —Khaled Soudki and Ted Sherwood; 15(4), 358-70 (2003).

Soudki, Khaled A.
Effectiveness of Impressed Current Technique to Simulate Corrosion of Steel Reinforcement in Concrete. — Tamer A. El Maaddawy and Khaled A. Soudki; 15(1), 41-7 (2003).

Starnes, Monica A.
Preliminary Thermography Studies for Quality Control of Concrete Structures Strengthened with Fiber-Reinforced Polymer Composites. —Monica A. Starnes, Nicholas J. Carino, and Eduardo A. Kausel; 15(3), 266-73 (2003).

Sulapha, P.
Carbonation of Concrete Containing Mineral Admixtures. — P. Sulapha, S. F. Wong, T. H. Wee, and S. Swaddiwudhipong; 15(2), 134-43 (2003).

Sultan, M. A.
Effect of Temperature on Thermal Properties of High-Strength Concrete. —V. K. R. Kodur and M. A. Sultan; 15(2), 101-7 (2003).

Swaddiwudhipong, S.
Carbonation of Concrete Containing Mineral Admixtures. — P. Sulapha, S. F. Wong, T. H. Wee, and S. Swaddiwudhipong; 15(2), 134-43 (2003).

Swaddiwudhipong, Somsak
Prepacked Grouting Process in Concrete Construction. — Somsak Swaddiwudhipong, Jing Zhang, and Seng Lip Lee; 15(6), 567-76 (2003).

Tadeu, António J. B.
Bond Geometry and Shear Strength of Steel Plates Bonded to Concrete on Heating. — Fernando J. F. G. Branco, António J. B. Tadeu, and José A. D. Nogueira; 15(6), 586-93 (2003).

Tanrikulu, Ali Hamza
Discussion of "Correlations between Mechanical Properties of High-Strength Concrete" by M. A. Rashid, M. A. Mansur, and P. Paramasivam. — Cengiz Duran Atiş and Ali Hamza Tanrikulu; 15(5), 511-2 (2003).

Tarefder, R. A.
Formulation of Mix Design for Asphaltic Incorporation of Hydrocarbon Contaminated Soil. — R. A. Tarefder, M. E. Ruckgaber, M. Zaman, and D. Patton; 15(2), 166-73 (2003).

Tay, Joo-Hwa
Reuse of Incinerator Fly Ash in Soft Soil Stabilization. — Kuan-Yeow Show, Joo-Hwa Tay, and Anthony T. C. Goh; 15(4), 335-43 (2003).
Thermal Stabilization of Iron-Rich Sludge for High Strength Aggregates. — Joo-Hwa Tay, Kuan-Yeow Show, Sze-Yunn Hong, Chao-Yu Chien, and Duu-Jong Lee; 15(6), 577-85 (2003).

Tixier, Raphaël
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. I: Formulation. — Raphaël Tixier and Barzin Mobasher; 15(4), 305-13 (2003).
Modeling of Damage in Cement-Based Materials Subjected to External Sulfate Attack. II: Comparison with Experiments. — Raphaël Tixier and Barzin Mobasher; 15(4), 314-22 (2003).

Torres-Acosta, Andrés A.
Residual Life of Corroding Reinforced Concrete Structures in Marine Environment. — Andrés A. Torres-Acosta and Miguel Martínez-Madrid; 15(4), 344-53 (2003).

Trejo, David
Alternative Cap Materials for Evaluating the Compressive Strength of Controlled Low-Strength Materials. — David Trejo, Kevin Folliard, and Lianxiang Du; 15(5), 484-90 (2003).

Udoeyo, Felix F.
Maize-cob Ash As Filler in Concrete. — Felix F. Udoeyo and Sanni A. Abubakar; 15(2), 205-8 (2003).

Voigt, Thomas
Determination of Early Age Mortar and Concrete Strength by Ultrasonic Wave Reflections. — Thomas Voigt, Yilmaz Akkaya, and Surendra P. Shah; 15(3), 247-54 (2003).

Wee, T. H.
Carbonation of Concrete Containing Mineral Admixtures. — P. Sulapha, S. F. Wong, T. H. Wee, and S. Swaddiwudhipong; 15(2), 134-43 (2003).

Wong, S. F.
Carbonation of Concrete Containing Mineral Admixtures. — P. Sulapha, S. F. Wong, T. H. Wee, and S. Swaddiwudhipong; 15(2), 134-43 (2003).

Wong, W. G.
Polymer Effects on the Vibration Damping Behavior of Cement. — W. G. Wong, Ping Fang, and J. K. Pan; 15(6), 554-6 (2003).

Xi, Y.
ASR Potentials of Glass Aggregates in Water-Glass Activated Fly Ash and Portland Cement Mortars. — Z. Xie, W. Xiang, and Y. Xi; 15(1), 67-74 (2003).

Xi, Yunping
Chloride Penetration in Nonsaturated Concrete. — Ayman Ababneh, Farid Benboudjema, and Yunping Xi; 15(2), 183-91 (2003).

Xiang, W.
ASR Potentials of Glass Aggregates in Water-Glass Activated Fly Ash and Portland Cement Mortars. — Z. Xie, W. Xiang, and Y. Xi; 15(1), 67-74 (2003).

Xie, Z.
ASR Potentials of Glass Aggregates in Water-Glass Activated Fly Ash and Portland Cement Mortars. — Z. Xie, W. Xiang, and Y. Xi; 15(1), 67-74 (2003).

Yamamuro, Jerry A.
Resistance Changes during Compression of Carbon Fiber Cement Composites. — Farhad Reza, Gordon B. Batson, Jerry A. Yamamuro, and Jong S. Lee; 15(5), 476-83 (2003).

Yazdani, Nur
Substitution of Fly Ash, Slag, and Chemical Admixtures in Concrete Mix Designs. — Yingqin "Elaine" Jin and Nur Yazdani; 15(6), 602-8 (2003).

Yodsudjai, Wanchai
Influence of Recycled Aggregate on Interfacial Transition Zone, Strength, Chloride Penetration and Carbonation of Concrete. — Nobuaki Otsuki, Shin-ichi Miyazato, and Wanchai Yodsudjai; 15(5), 443-51 (2003).

Zaman, M.
Formulation of Mix Design for Asphaltic Incorporation of Hydrocarbon Contaminated Soil. — R. A. Tarefder, M. E. Ruckgaber, M. Zaman, and D. Patton; 15(2), 166-73 (2003).

Zhang, Burong
Laboratory Evaluation of Fiber-Optic Sensors for Strain Monitoring. — Burong Zhang, Brahim Benmokrane, and Jean-Francois Nicole; 15(4), 381-90 (2003).

Zhang, Jing
Prepacked Grouting Process in Concrete Construction. — Somsak Swaddiwudhipong, Jing Zhang, and Seng Lip Lee; 15(6), 567-76 (2003).

Zhao, L. Y.
Simulation of Two-Dimensional Aggregate Distribution with Wall Effect. — J. J. Zheng, C. Q. Li, and L. Y. Zhao; 15(5), 506-10 (2003).

Zheng, J. J.
Simulation of Two-Dimensional Aggregate Distribution with Wall Effect. — J. J. Zheng, C. Q. Li, and L. Y. Zhao; 15(5), 506-10 (2003).

Zheng, Juanrong
Performance Characteristics of Soil-Cement from Industry Waste Binder. — Juanrong Zheng and Weizu Qin; 15(6), 616-8 (2003).